

**METEORITE EXPLORATION IN SAUDI ARABIA 2008: YABRIN AREA AND A VISIT TO THE WABAR CRATERS.** E. Gnos<sup>1</sup>, B. A. Hofmann<sup>2</sup>, M. Al-Shanti<sup>3</sup> and M. Al-Halawani<sup>3</sup> <sup>1</sup>Natural History Museum Geneva. E-mail: first author. <sup>2</sup>Natural History Museum Bern, Switzerland, <sup>3</sup>Saudi Geological Survey, Jeddah, Kingdom of Saudi Arabia.

**Introduction:** Based on experience with meteorite search areas along the southeastern border of the Rub Al-Khali desert in Oman, potentially suitable areas were identified on satellite images at the NW end of the Rub Al-Khali, centered around 23°15'N and 49°E in the area of the Yabrin oasis. In this area, light-coloured Miocene limestones as well as darker Quaternary gravel plains occur, rimmed in the west, south and east by sand dunes. The area of interest is about 100 by 250 km in size. During a field trip organized by the Saudi Geological Survey in March 2008, a first reconnaissance search for meteorites in this area was combined with a mapping of the Wabar crater field located in sand dunes ~200 km further SE. The number of previously known meteorites from Saudi Arabia (27) is very low considering the vast areas potentially suitable for discovering meteorites. Several meteorites were discovered during early oil prospecting [1].

**Meteorite search:** A three-day exploratory search for meteorites in the Yabrin area using two 4WD vehicles yielded five meteorites (four ordinary chondrites, one acapulcoite) of 19 to 13'900 g mass. The yield of 5 meteorites on a search trajectory of 320 km is comparable to yields in Oman.

**Wabar craters (Al-Hadeedah):** In the Wabar impact crater field only craters Philby A and large parts of the 11m-crater were visible in March 2008, whereas Philby-B was fully covered by a dune. The craters and impact ejecta fields were mapped using GPS, demonstrating significant changes since the 1994/95 mapping [2]. Shock-lithified sand from the two larger craters contains coesite and stishovite, while no coesite was detected in weakly shock-compacted sand below the 11m-crater.

Four samples of dead *Cornulaca Arabica* stems grown on the crater ejecta rims yielded modern <sup>14</sup>C ages, testifying periods of rapid growth following by dry periods. The craters may become sand covered protecting them from further damage due to cars driving over it.

**Conclusions:** Sand-free areas bordering the Rub Al-Khali in Saudi-Arabia appear to contain similar abundances of meteorites as the well-known meteorite recovery areas in Oman. A visit to the Wabar crater field in the dynamic sand sea of the Rub Al-Khali demonstrated the vulnerability of this unique site.

**References:**

- [1] Holm D.A. 1952. *American Journal of Science* 260:303–309. [2] Wynn J. C. 2002. *Journal of Environmental & Engineering* 7:143–150.